# HERALDO ROZAS

## I. Personal Information


**Full name**: Heraldo Felipe Rozas Ovando
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## II. Education

**Georgia Institute of Technology** — **Atlanta, USA**
Ph.D. in Industrial Engineering–Systems Informatics and Control — *August 2020 - August 2024*

**Universidad de Chile** — **Santiago, Chile**
M.Sc in Electrical Engineering — *April 2019*

**Universidad de Chile** — **Santiago, Chile**
B.Sc in Electrical Engineering — *September 2017*

## III. Educational Experience

**Teaching assistant**

1. 3030 - Basic Statistical Methods — *August 2020 - May 2021*
H. Milton Stewart School of Industrial and Systems Engineering
Georgia Institute of Technology

2. EL4003 Signals and Systems II — *March 2018 - July 2018*
Department of Electrical Engineering , Universidad de Chile.

3. FI2002 Electromagnetism — *August 2016 - December 2016*
Department of Physics, Universidad de Chile.

4. EL3002 Applied Electromagnetism — *March 2016 - July 2016*
Department of Electrical Engineering , Universidad de Chile.

**Lab Demonstrator**

1. EL5205 Advanced Control Laboratory — *August 2017 - December 2017*
Department of Electrical Engineering , Universidad de Chile.

## IV. Professional Experience

**Graduate Research Assistant** — *August 2020 - Present*
NASA's Habitat Optimized for Missions of Exploration-
Space Technology Research Institute (HOME STRI),
Predictive Analytics & Intelligent Systems (PAIS) Research Group
H. Milton Stewart School of Industrial and Systems Engineering
Georgia Institute of Technology

**Project Engineer** — *April 2019- May 2020*
**Project title:** *"Development of an Artificial Intelligence Model for Ion-Lithium Battery Performance Optimization in Electric Vehicles"*
Department of Electrical Engineering
Universidad de Chile

**Research Assistant** — *August 2016 - June 2020*
Fault Diagnosis and Failure Prognosis Laboratory
Department of Electrical Engineering
Universidad de Chile.

## V. Research

### a. List of Web of Science Journal Publications

1. **Rozas, H.**, Xie, W., and Gebraeel, N., "Data-driven joint optimization of maintenance and spare inventory: A distributionally robust chance-constrained program," MSOM Informs, 2023 (Status: *Under Review*).
2. **Rozas, H.**, Basciftci, B., and Gebraeel, N., "Data-driven joint optimization of maintenance and spare parts provisioning for deep space habitats," Acta Astronautica, 2023 (Status: *Under Review*).
3. **Rozas, H.**, Xie, W., and Gebraeel, N., "Condition-based maintenance for wind farms using a distributionally robust chance-constrained program," IEEE Transactions on Power Systems, 2023 (Status: *Under Review*).
4. Ibrahim, M., **Rozas, H.**, and Gebraeel, N., "An integrated detection-prognostics methodology for components with intermittent faults," IEEE Transactions on Reliability, 2023 (Status: *Under Review*).
5. Futalef, J. P., Muñoz-Carpintero, D., R **Rozas, H.**, and Orchard, M. E. (2023). An online decision-making strategy for routing of electric vehicle fleets. Information Sciences, 625, 715-737. doi.org/10.1016/j.ins.2022.12.108
6. Shi, J., **Rozas, H.**, Yildirim, M., and Gebraeel, N. (2023). A stochastic programming model for jointly optimizing maintenance and spare parts inventory for IoT applications. IISE Transactions, 55(4), 419-431. doi.org/10.1080/24725854.2022.2127164
7. **Rozas, H.**, Muñoz-Carpintero, D., Saéz, D., and Orchard, M. E. (2021). Solving in real-time the dynamic and stochastic shortest path problem for electric vehicles by a prognostic decision making strategy. Expert Systems with Applications, 184, 115489. doi.org/10.1016/j.eswa.2021.115489
8. **Rozas, H.**, Troncoso-Kurtovic, D., Ley, C. P., and Orchard, M. E. (2021). Lithium-ion battery State-of-Latent-Energy (SoLE): A fresh new look to the problem of energy autonomy prognostics in storage systems. Journal of Energy Storage, 40, 102735. doi.org/10.1016/j.est.2021.102735
9. Díaz, C., Quintero, V., Pérez, A., Jaramillo, F., Burgos-Mellado, C., **Rozas, H.**, and Cárdenas, R. (2020). Particle-filtering-based prognostics for the state of maximum power available in lithium-ion batteries at electromobility applications. IEEE Transactions on Vehicular Technology, 69(7), 7187-7200. doi.org/10.1109/TVT.2020.2993949
10. **Rozas, H.**, Jaramillo, F., Perez, A., Jimenez, D., Orchard, M., and Medjaher, K. (2019). "A method for the reduction of the computational cost associated with the implementation of particle-filter-based failure prognostic algorithms". Mechanical Systems and Signal Processing. doi.org/10.1016/j.ymssp.2019.106421

### b. List of other publications

b.1. List of Conference Publications:

1. Perez, A., **Rozas, H.**, Jaramillo, F., Quintero, V., and Orchard, M. (2019). A simulation engine for the characterization of capacity degradation processes in lithium-ion batteries undergoing heterogeneous operating conditions. In Annual Conference of the PHM Society (Vol. 11, No. 1) doi.org/10.36001/phmconf.2019.v11i1.855
2. Perez, A., Quintero, V., Jaramillo, F., **Rozas, H.**, Jimenez, D., Orchard, M., and Moreno, R. (2018). Characterization of the degradation process of lithium-ion batteries when discharged at different current rates. Proceedings of the Institution of Mechanical Engineers, Part I: Journal of Systems and Control Engineering, 232(8), 1075-1089, doi.org/10.1177/0959651818774481
3. **Rozas, H.**, Munoz-Carpintero, D., Perez, A., Medjaher, K., and Orchard, M. (2018). An approach to prognosis-decision-making for route calculation of an electric vehicle considering stochastic traffic information. In the Fourth European Conference of the Prognostics and Health Management Society 2018 doi.org/10.36001/phme.2018.v4i1.440
4. **Rozas, H.**, Claveria, R. M., Orchard, M. E., and Medjaher, K. (2018). Residual-based scheme

for detection and characterization of faults in lithium-ion batteries. IFAC-PapersOnLine, 51(24), 200-207. doi.org/10.1016/j.ifacol.2018.09.578

5. Perez, A., Quintero, V., **Rozas, H.**, Jimenez, D., Jaramillo, F., and Orchard, M. (2017). Lithium-ion battery pack arrays for lifespan enhancement. In 2017 CHILEAN Conference on Electrical, Electronics Engineering, Information and Communication Technologies (CHILECON) (pp. 1-5). IEEE. doi.org/10.1109/CHILECON.2017.8229537
6. Pérez, A., Quintero, V., **Rozas, H.**, Jaramillo, F., Moreno, R., and Orchard, M. (2017). Modelling the degradation process of lithium-ion batteries when operating at erratic state-of-charge swing ranges. In 2017 4th international conference on control, decision and information technologies (codit) (pp. 0860-0865). IEEE, doi.org/10.1109/CoDIT.2017.8102703

### b.2. Conference Activities and Academic Service:

1. *Presenter*, presentation title: "Joint Optimization of Maintenance Scheduling and Spares Provisioning in Deep Space Habitats", IISE 2023 Annual Conference, New Orleans, USA.
2. *Poster presenter*, poster title: "Joint Optimization of Maintenance Scheduling and Spares Provisioning in Deep Space Habitats", SmartHab Workshop 2022, San Antonio, USA.
3. *Session chair*, session title: "Optimization in Quality and Reliability", IISE 2023 Annual Conference, New Orleans, USA.
4. *Reviewer:* IEEE Transactions on Reliability, IISE Transactions, International Journal of Prognostics and Health Management, and Prognostics and Health Management Conference 2018 and 2019.

### b.3. Research Projects:

1. *Graduate Research Assistant* (*August 2020 - Present*), Project title: *"NASA STRI: HOME: Space Technology Research Institute for Deep Space Habitat Design"*, Georgia Institute of Technology, USA.
2. *Research Assistant* (*March 2018 - May 2020*), Project title: *"FONDEF IDeA ID18I10379–Development of an Artificial Intelligence Model for Optimizing the Performance of Lithium-Ion Batteries in Electric Vehicles"*, Universidad de Chile, Chile.
3. *Research Assistant* (*August 2016 - December 2017*), Project title: *"ANID-FONDECYT Project #1170044–Prognostics Performance Metrics based on Bayesian Cràmer-Rao Lower Bounds"*, Universidad de Chile, Chile.

## VI. Others

### a. Awards and Fellowships:

**Energy, Natural Resources, and the Environment (ENRE) Student Best Paper Award(2023)**
▷ INFORMS 2023

**Stewart Fellowship (2020)**
▷ Fellowship awarded by Georgia Institute of Technology.

**FULBRIGHT Scholarship (2020-2024)**
▷ International Scholarship to pursue doctoral studies in the US, awarded by FULBRIGHT CHILE.

**CONICYT - Master's Scholarship (2018)**
▷ National Grant to pursue master studies in Chile, awarded by CONICYT.

**Distinguished student ( 2014, 2015, 2016, 2017, 2018 )**
▷ Recognition awarded by the Schools of Engineering and Sciences of the Universidad de Chile for achieving outstanding performance while pursuing B.Sc or M.Sc.

**b. Computing Skills:** Python, Matlab, and Simulink.
**c. Languages:** English (Fluent) and Spanish (Native).